MATERIALS ENGINEERING RESEARCH LAB (MERL)

The Materials Engineering and Research Laboratory (MERL) personnel are experts on the various materials Reclamation uses to build and maintain its structures. We are divided into eight disciplines:

- Concrete
- Concrete Repair
- Corrosion Protection
- Geotechnical Engineering
- Petrographic Analysis
- Polymers / Geosynthetics
- Protective Coatings
- Structural Testing

Services offered We provide a wide variety of services including: troubleshooting construction problems, specification preparation and review, material submittal approvals, onsite inspection and other field services, expertise in state-of-the-art construction materials and practices, research on material problems, and training.

Technical training offered by MERL Concrete and concrete repair school, corrosion school, coatings school, and earth school are taught every 12 months. An ACI Concrete Construction Special Inspector certification course is also held periodically. Customized training programs are available.

MERL staff are experts in a variety of engineering disciplines including: Chemical, Civil, Mechanical, Electrical, Metallurgical, Corrosion, Materials, Ceramic, and Polymer Science. Many of our staff hold advanced degrees, professional engineer registrations, and certifications from various professional societies including NACE, SSPC, and ACI.

Staff are trained in Rope Access (SPRAT) and SCUBA dive techniques to provide safe, efficient, and cost effective means for inspection or repair of otherwise inaccessible features.

Materials Engineering and Research Laboratory

Denver Federal Center
Building 56, 1400 wing
P.O. Box 25007 (86-68180)
Denver, CO 80225-0007
http://www.usbr.gov/pmts/materials_lab/

MERL Manager:

William F. Kepler, PE, Ph.D.
wkepler@usbr.gov
Phone: 303-445-2386
Fax: 303-445-6341

Corrosion Staff:

Daryl Little, Ph.D.
dlittle@usbr.gov
303-445-2384

Lee Sears, Ph.D.
lsears@usbr.gov
303-445-2392

Jessica Torrey, Ph.D.
jtorrey@usbr.gov
303-445-2376

Roger Turcotte, PE
rturcotte@usbr.gov
303-445-2383

Please contact us for more information!

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

July 2012

CORROSION

MATERIALS ENGINEERING AND RESEARCH LABORATORY

RECLAMATION

Managing Water in the West

Corrosion Group Capabilities:

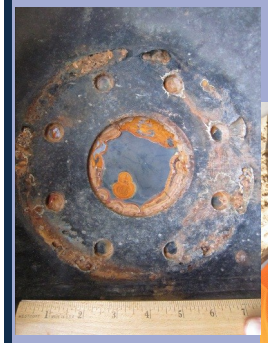
Cathodic protection design, testing, troubleshooting, and repair.

Corrosion-related inspection during and after construction and whenever problems arise. This includes inspection of pipelines and tanks, evaluation of efficacy of cathodic protection systems, and fiber reinforced polymer repairs.

Corrosion testing and monitoring in field and lab settings including salt fog, immersion, cathodic disbondment, electro impedance spectroscopy (EIS), and coupon testing per ASTM standards.

Applied research facilities for assessment of new materials, corrosion mitigation methods, and corrosion and degradation issues related to Reclamation materials in a variety of environments and water chemistries.

Forensic analysis and failure analysis of metal parts and coatings, metallographic examination, analysis of fracture surfaces, examination using microscopy and X-Ray diffraction.



Materials selection for metals and non-metals.

Certifications:

Registered Professional Engineer

NACE Certified Cathodic Protection Specialists

API Inspector Certifications for Pressure Vessels, Piping, and Tanks

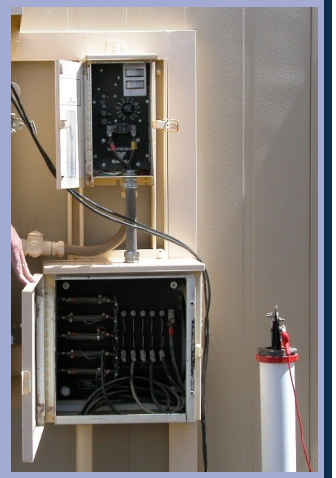
Qualified Fiber Reinforced Polymer Inspector

Publications:

- Guide to Field Installation Inspection and Quality Control for Cathodic Protection Systems
- Corrosion Considerations when Embedding Pipes in Controlled Low Strength Material
- Guide to Evaluate Corrosion Mitigation and Preventative Technologies of Concrete Reinforcing Steel (2013)
- Online instructive videos including:
    - Submittals and Design Criteria
    - Corrosion Mitigation
    - Cathodic Protection

Corrosion and Coatings School:

Corrosion and Coatings School is a 3-day course offered by MERL. This course will familiarize participants with the issues relating to corrosion of metal and corrosion protection including how corrosion occurs and methods to minimize and prevent corrosion to infrastructure, protective coatings, cathodic protection, new technologies; and inspection and repair techniques. The course will also provide hands-on experience to participants. Contact any group member for further information.



Types of Structures:

- Pipelines
- Canals
- Storage Tanks
- Pressure Vessels
- Dams
- Pumps
- Gates
- Trashracks

Project Experience:

- All American Canal
- Central Arizona Project
- El Vado Dam
- Leadville Mine Drainage Treatment Plant
- Navajo-Gallup Water Supply Project
- San Luis Drainage Implementation Demonstration Treatment Plant
- Weber Branch and Coulee Siphon Project